UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

STATE OF WASHINGTON, et al.,

Plaintiffs,

v.

DONALD J. TRUMP, in his official capacity as President of the United States, et al.,

Defendants.

NO. 2:25-cv-00244-LK

SUPPLEMENTAL EXPERT DECLARATION OF DANIEL SHUMER, MD, IN SUPPORT OF PLAINTIFFS' MOTION FOR PRELIMINARY INJUNCTION

NOTE ON MOTION CALENDAR: February 28, 2025 at 2:00 p.m.

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Complex Litigation Division
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Seattle, WA 98104
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I, Daniel Shumer, MD, hereby declare and state as follows:

1. I am over 18 years of age, of sound mind, and in all respects competent to testify.

2. I have been retained by counsel for Plaintiffs as an expert in connection with the above-captioned litigation. The opinions expressed herein are my own and do not express the views or opinions of my employer.

3. I have actual knowledge of the matters stated herein. If called to testify in this matter, I would testify truthfully and based on my expert opinion.

4. I have also reviewed the materials listed in the bibliography attached as **Exhibit 1** to this report. I may rely on these materials as additional support for my opinions.

Response to Executive Order 14,168

5. Section 2 of Executive Order 14,168 presents scientific and medical inaccuracies and misstatements. The order defines "sex" as "an individual's immutable biological classification as either male or female . . ." and does not include the concept of "gender identity." The terms "female" and "male" are further defined: "female" defined as "a person belonging, at conception, to the sex that produces the large reproductive cell," and "male" defined as "a person belonging, at conception, to the sex that produces the small reproductive cell." These definitions are oversimplifications that are inaccurate.

6. As described in Section II.A of my initial report (Dkt. # 19 at 6), sex is comprised of several components. Sometimes the aspects that comprise a person's sex are discordant with one another. Such is the case for transgender people and those born with Differences/Disorders of Sex Development (DSDs).

7. At conception, a sperm cell and egg cell combine, each contributing genetic material called DNA to form a zygote (Oliver, Basit, 2023). The DNA contributed by the sperm and the egg are packaged in chromosomes. In humans both the sperm and egg typically contribute 23 chromosomes. The zygote therefore typically has 23 pairs of chromosomes, or a total of 46. These chromosomes provide "instructions" for dividing, growing, and all other

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aspects of embryological and fetal development. Two of the chromosomes are termed "sex chromosomes". Typically, the egg contributes an X chromosome, and the sperm contributes either an X or Y chromosome, resulting in a zygote which is either XX (normal female chromosomal sex) or XY (normal male chromosomal sex). Variations in sex chromosomes exists, whereby a zygote may have only one X chromosome (Turner Syndrome), two X chromosomes and one Y chromosome (Klinefelter Syndrome), or other variations (e.g., XYY, XXXY, XYY). The chromosomal sex (sometimes called genetic sex) of the embryo is therefore established at fertilization with XY and XX being the most common variations, with less common variations possible (Rey, et al., 2020).

8. A zygote has a chromosomal sex but no gonadal sex, no hormonal sex, no anatomic sex, and no gender identity. A zygote does not itself make reproductive cells, large or small. A zygote may be described as carrying XX chromosomes, XY chromosomes, or other less common sex chromosome configurations, but to label a zygote "female" or "male" is premature. These labels cannot be assigned at conception prior to the process of sex differentiation. Thus, the definitions of "female" and "male" in Section 2 of Executive Order 14,168 are inaccurate.

9. As the zygote begins to multiply it becomes an embryo. Genes within the sex chromosomes helps to orchestrate a series of events whereby the embryo develops male or female characteristics in a process called sex differentiation. Embryos with XY chromosomes, for example, develop different in the gonads, genital tract, and external genitalia than embryos with XX chromosomes. The chromosomal or genetic sex drives the undifferentiated primitive gonad to differentiate into a testis or an ovary. Subsequently, internal and external genitalia will typically follow the male pathway in the presence of specific testicular hormones, or the female pathway in the absence of these hormones (Rey et al., 2020).

10. However, at every step along this pathway, typical sex differentiation depends on a complex interplay of genetic instructions, cellular changes, production of hormones, and tissue

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changes in response to these hormones. Individual differences, such as having an atypical chromosomal sex or having genetic mutations in genes required for hormonal production or synthesis of hormone receptors, result in a broad spectrum of variability in sex differentiation. In cases where these individual variation leads to atypical sex differentiation, a fetus will have hormonal production and/or anatomic development discordant with the chromosomal sex (Rey et al., 2020). According to a consensus statement by the Lawson Wilkins Pediatric Endocrine Society (now called the Pediatric Endocrine Society) and the European Society for Paediatric Endocrinology, the term "disorders of sex development" is defined as "congenital conditions in which development of chromosomal, gonadal, or anatomical sex is atypical. These situations, when chromosomal sex, hormonal sex, and or anatomic sex are not fully concordant, are termed DSDs." (Hughes, et al., 2006).

11. Approximately 1 in 1000 to 4500 infants have a DSD. As a pediatric endocrinologist, I am frequently paged to the nursery to evaluate babies born with genitals which are neither clearly male nor female. This is often a time of uncertainty and distress for parents and families. A multidisciplinary team of experienced providers perform laboratory, genetic, and imaging studies to better understand the sex of the infant. A karyotype test is performed to learn the chromosomal sex. An ultrasound can be helpful to evaluate the appearance of the gonads and internal sex organs. The sex assignment is ultimately made based on the best available evidence and considerations such as the type of DSD, prenatal hormone exposures, fertility considerations, and psychosocial factors (Mehmood, et al., 2023).

12. The understanding of this complex topic is aided by providing examples. Androgen insensitivity syndrome is a spectrum of conditions involving mutations involving the androgen receptor. In these conditions, individuals with XY sex chromosomes and testes make testosterone normally. However, the receptor to which testosterone attaches in every cell of the body is faulty. In *complete* androgen sensitivity syndrome (CAIS), testosterone has no ability to activate its receptor, and despite normal production of testosterone from normal testes, there is

no masculinization of the genitals during fetal life. Infants with CAIS have normal appearing female genitals, no uterus, and testes in the abdomen. These infants have a male chromosomal sex, a male gonadal sex, an abnormal male internal anatomic sex, and a typical female external anatomic sex. Infants with CAIS are invariably assigned female at birth and typically have a female gender identity when they are able to express a gender identity (Acién, Acién, 2020).

13. In less severe mutations to the androgen receptor, an individual will have less than normal, or partial, response to testosterone at the receptor. The result is a spectrum of presentations at birth classified as *partial* androgen insensitivity syndrome (PAIS); some individuals with external genitals appearing more female, others more male, and some squarely ambiguous (Acién, Acién, 2020). Sex assignment following birth is variable for patients with PAIS despite all of these patients having a male chromosomal sex and gonadal sex. In a report of 118 cases of PAIS, 87 (74%) were assigned male and raised as boys and 31 (26%) were assigned female and raised as girls (Kolesinska, et al., 2014). A separate review of 99 individuals with PAIS found that 9 (9.1%) later expressed a gender identity opposite that of the sex assigned at birth and transitioned to the identified sex (Mazur, 2005).

14. Congenital adrenal hyperplasia (CAH) is a DSD described in my previous report (Dkt. # 19 ¶ 35). Fetuses with XX chromosomes affected by CAH produce much higher levels of testosterone compared to fetuses without the condition. This is due to deficiencies in enzymes involved in the synthesis of hormones within the adrenal gland. Sex assignment at birth is variable, with some infants with this condition assigned female, and others male. A literature review including 283 individuals with CAH demonstrated that in patients assigned female 5.3% (13 of 250) had gender identity concerns later in life; in patients assigned male 12.1% (4 of 33) had gender concerns (Dessens, et al., 2005).

15. 5-alpha reductase deficiency (5aRD) is a condition where individuals with typical XY chromosomal sex, normal testes, and normal ability to produce testosterone have an enzymatic deficiency whereby testosterone cannot be converted to the more potent activated

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version of testosterone called dihydrotestosterone (DHT) (Acién, Acién, 2020). Infants with 5aRD typically have a genital appearance ranging from more female, more male, or frankly ambiguous. Gender identity concerns are extremely common in this condition, with one study suggesting that 63% of infants assigned female at birth later express having a male gender (Cohen-Kettenis, 2005). In the 1970's scientists discovered that in an isolated village in the Dominican Republic approximately 2% of the population carried a XY chromosomal sex with apparent female genitals at birth. These children were raised as girls until puberty, at which time the clitoral structure grew into a small phallus, the body became more masculinized, the voice deepened, and the adolescent lived a life typical of other males in the village. This variation of sex was so common that individuals with this condition were referred to as *guevedoce* (translated as "penis at 12") and were accepted as a normal and valued part of the community (Marks, 2005). In the United States today, when a DSD team and parents elect to assign a female sex to an infant with 5aRD the decision is often made to remove the testes in order to prevent masculinization at puberty (Kumar, Barboza-Meca, 2022).

16. McGee, et al. (2022) describe a case of a patient with ambiguous genitalia born in China and assigned male at birth. Upon adoption in the United States the child clearly identified as female and presented to a pediatric endocrinologist at age four. The child was reared female and her legal name and gender were changed. At age 11 she entered puberty and developed gender dysphoria related to masculinizing changes. She was treated with puberty blockers at Tanner stage 2, followed by estrogen. She later was treated with gender affirming feminizing genital surgery.

17. This case highlights the folly and short-sightedness of Section 2 of Executive Order 14,168, and by extension, Executive Order 14,187. The child described received a sex assignment of male at birth, which, upon learning the child's gender identity, was determined to be incorrect. If the child had been assigned female at birth and born in the United States, she may have had a gonadectomy in infancy. Her providers could have also elected to perform

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gonadectomy at age four. Instead, they placed a higher priority on patient autonomy and assent, and used lessons learned from the management of gender dysphoria to make a more careful and cautious, and ultimately successful medical plan.

18. Across all DSDs the variability of gender identity requires re-evaluation of sex assignment when the infant becomes a child and expresses a gender identity. For this reason, it is recommended that children and adolescents with DSD receive multidisciplinary care and long-term psychological support as it pertains to gender identity (Babu, Shah, 2021). Section 2 of Executive Order 14,168 ignores this science and places individuals with DSDs in a precarious and confusing position.

19. The majority of transgender adolescents do not have a DSD. But the Executive Orders' failure to acknowledge the existence of DSDs illustrates that the definitions in the Executive Orders do not actually reflect "biological truth" or "the biological reality of sex." Instead, the Orders ignore the "biological reality" that not every person can be classified as male or female at conception. The Executive Orders' complete exclusion of gender identity as a sex characteristic with a biological basis is similarly not rooted in "biological truth." They ignore biological basis from which gender identity is derived, as described in paragraphs 32–37 of my initial report.

20. "Gender ideology" is not a medical term. The order claims this term "replaces the biological category of sex with an ever-shifting concept of self-assessed gender identity, permitting the false claim that males can identify as and thus become women and vice versa, and requiring all institutions of society to regard this false claim as true." It is fact that some individuals identify with a sex different from what was assigned at birth. Acceptance or lack-of-acceptance of this fact by any "institutions of society" does not make it any more or less true.

21. "Gender dysphoria" is defined as "disconnected from biological reality" and again ignores there are biological factors underpinning of gender identity. Gender identity is not used as "a replacement for sex" but rather an important aspect of sex.

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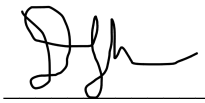
22. In summary, Section 2 of Executive Order 14,168 provides inaccurate definitions and misstatements which, when attempting to apply the Order to clinical practice or scientific reality, make the Order nonsensical.

I declare under penalty of perjury under the laws of the State of Washington and the United States of America that the foregoing is true and correct.

DATED this 18th day of February 2025.



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